

# Exploring the Boundaries of Reality: Investigating the Phenomenon of Artificial Intelligence Hallucination in Scientific Writing Through ChatGPT References

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## Abstract

Background Chatbots are computer programs that use artificial intelligence (AI) and natural language processing (NLP) to simulate conversations with humans. One such chatbot is ChatGPT, which uses the third-generation generative pre-trained transformer (GPT-3) developed by OpenAI. ChatGPT has been praised for its ability to generate text, but concerns have been raised about its accuracy and precision in generating data, as well as legal issues related to references. This study aims to investigate the frequency of AI hallucination in research proposals entirely drafted by ChatGPT. Methodology An analytical design was employed to investigate AI hallucination by ChatGPT. A total of 178 references listed by ChatGPT were verified for inclusion in the study. Statistical analysis was performed by five researchers who entered their data into a Google Form, and the final results were represented using pie charts and tables. Results Out of the 178 references analyzed, 69 references did not have a Digital Object Identifier (DOI), and 28 references neither turned up on Google search nor had an existing DOI. Three references were listed from books and not research articles. These observations suggest that ChatGPT's ability to generate reliable references for research topics may be limited by the availability of DOI and the accessibility of online articles. Conclusions The study highlights the potential limitations of ChatGPT's ability to generate reliable references for research proposals. AI hallucination is a problem that may negatively impact decision-making and may give rise to ethical and legal problems. Improving the training inputs by including diverse, accurate, and contextually relevant data sets along with frequent updates to the training models could potentially help address these issues. However, until these issues are addressed, researchers using ChatGPT should exercise caution in relying solely on the references generated by the AI chatbot.